

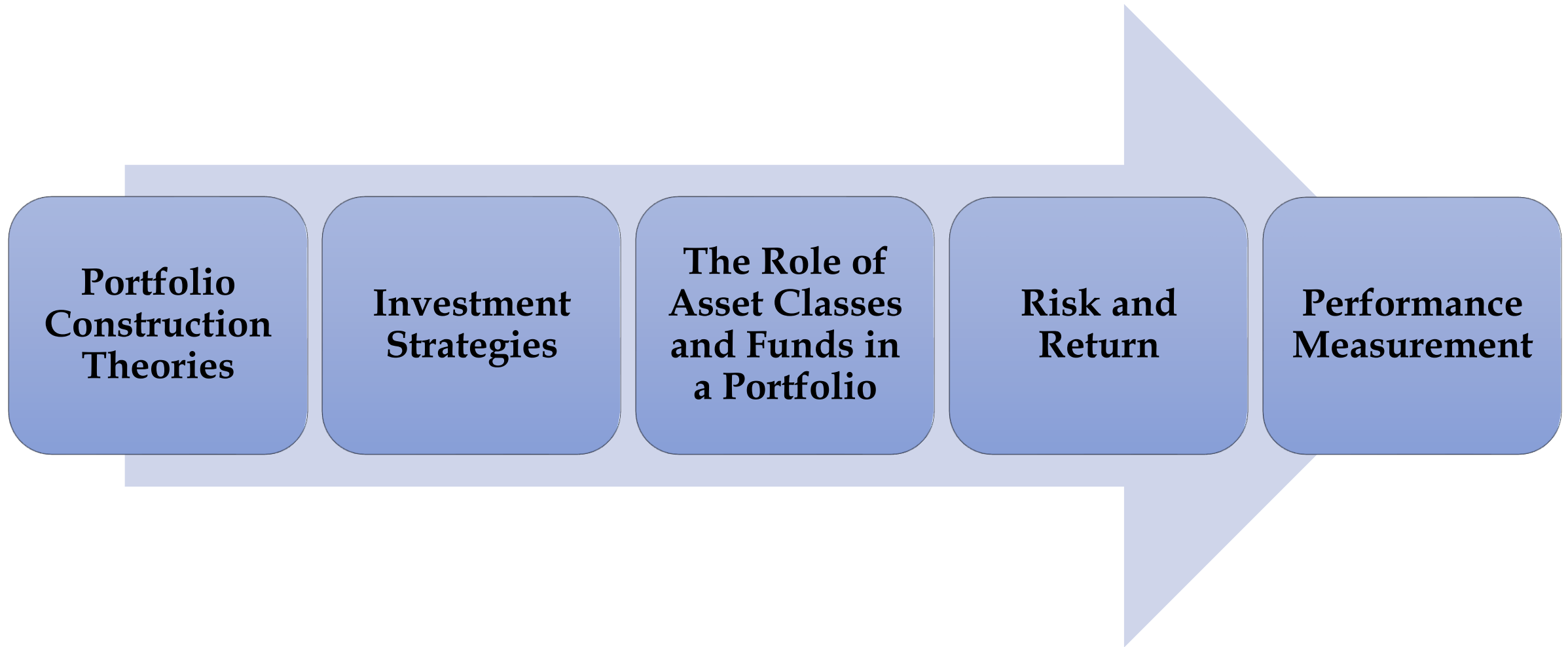


Chapter 6 – Investment Management

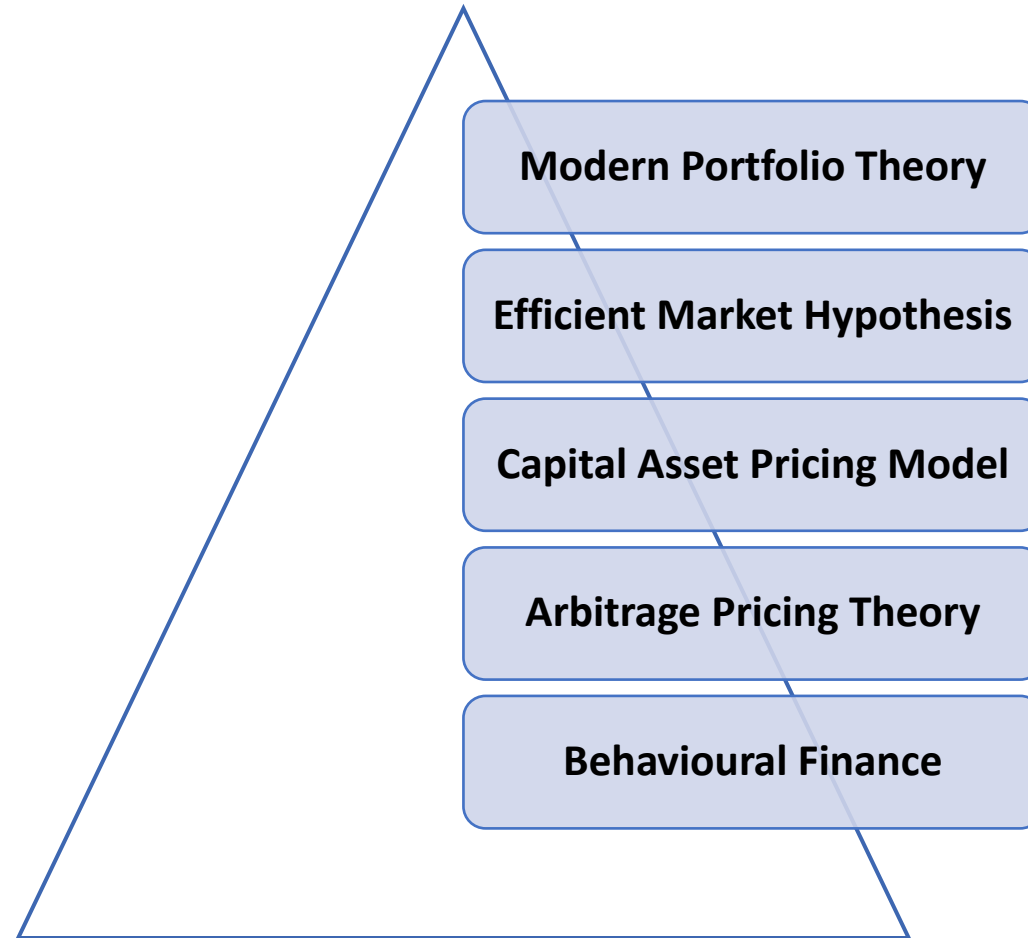
15 Questions



Chapter 6 Investment Management



Portfolio Construction Theories



Modern Portfolio Theory (MPT)

Theory by US academic Harry Markowitz in 1952

By combining securities into a diversified portfolio the overall risk will be less than the risk inherent in holding any one individual stock and so reduce the combined variability of their future returns

The risk for individual stocks consists of:

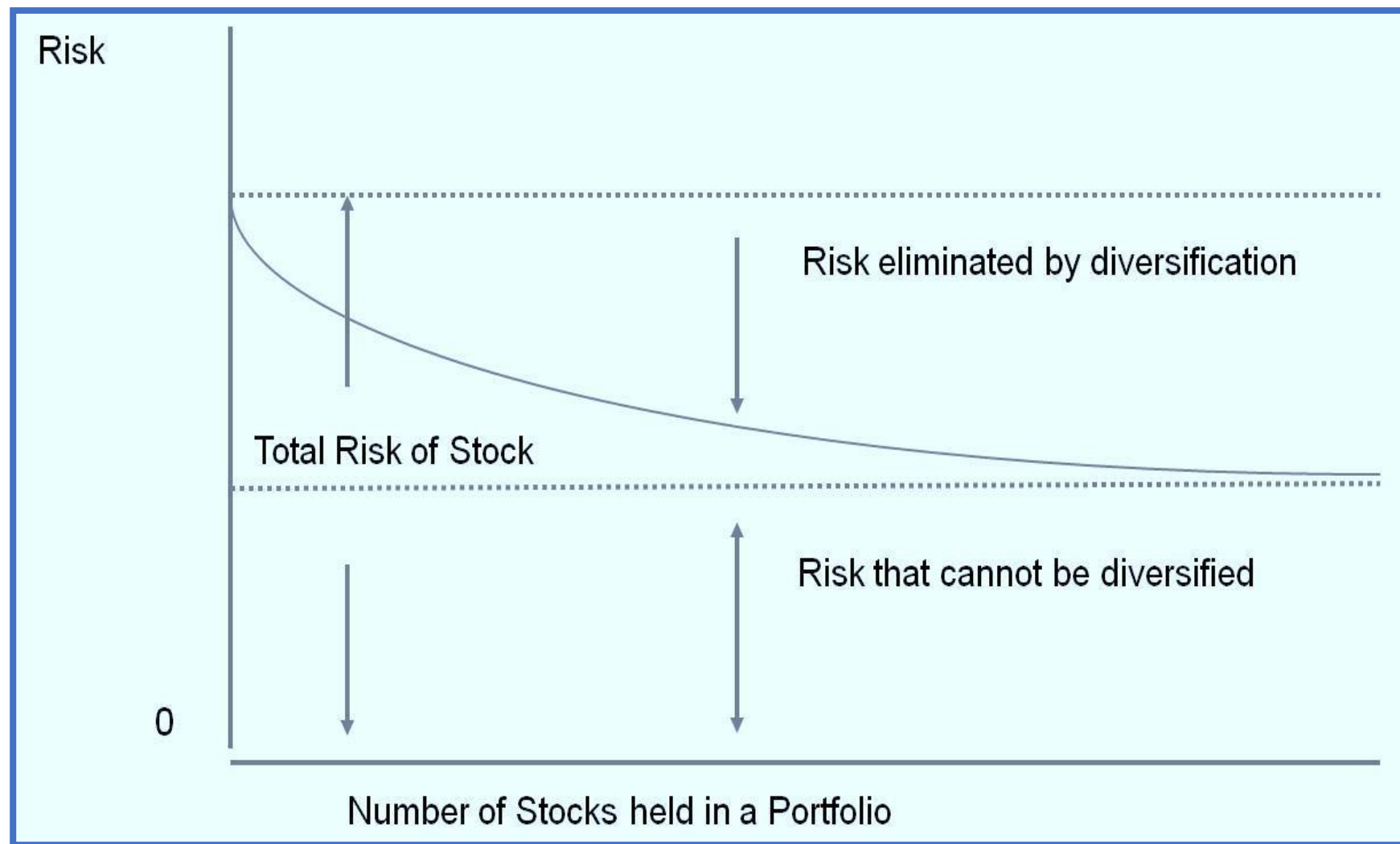
- Systematic risk - these are market risks that cannot be diversified away
- Unsystematic risk - this is the risk associated with a specific stock and can be diversified away by increasing the number of stocks in a portfolio

A well diversified portfolio will reduce the risk that its actual returns will be lower than expected.

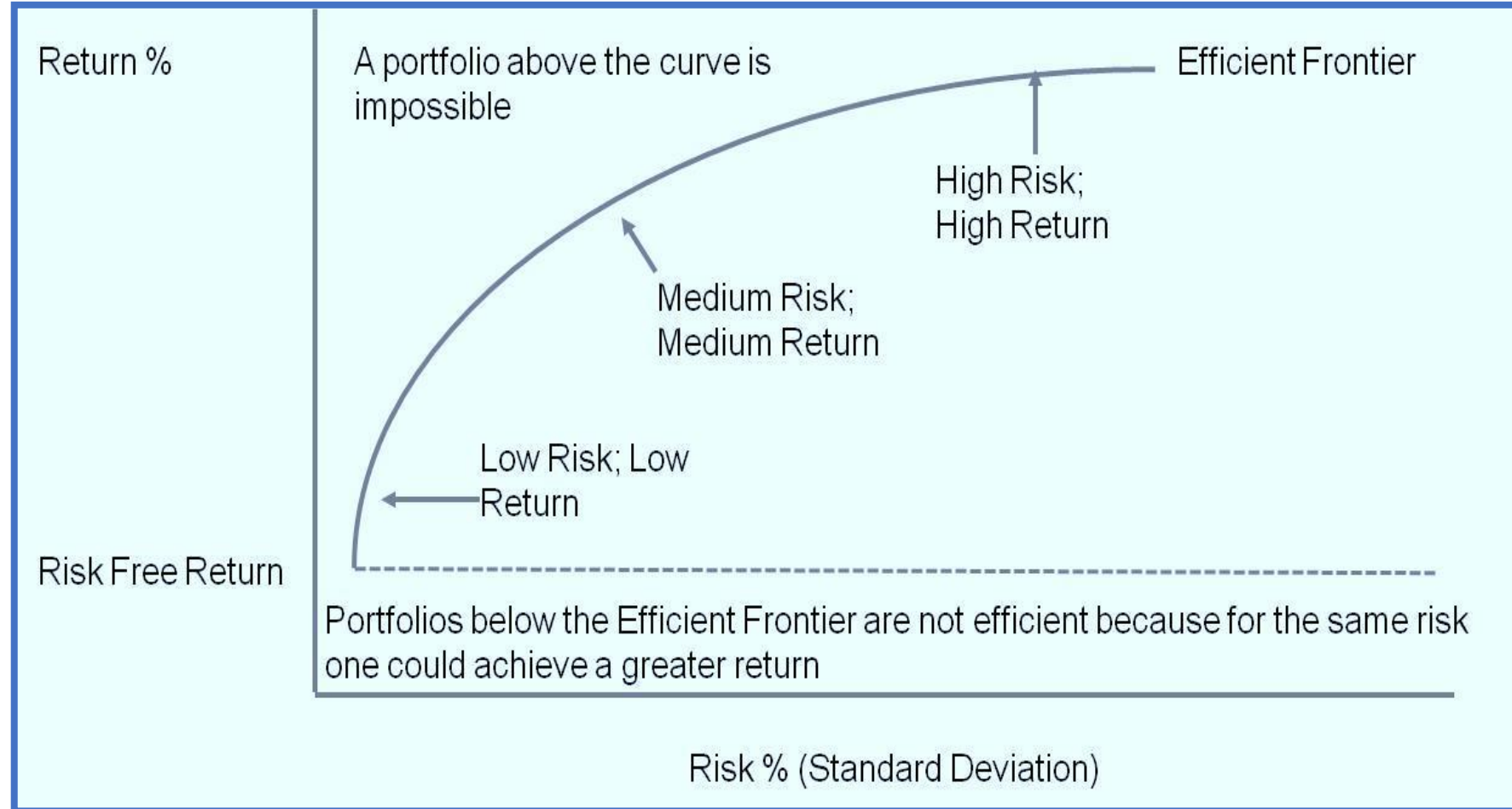
- Systematic/Market Risk and Unsystematic/Stock Specific Risk



MPT - Systematic/Market Risk and Unsystematic/Stock Specific Risk



MPT – Efficient Frontier Curve



Limitations of the use of the Efficient Frontier

Assumes that standard deviation is the correct measure of risk and that assets have normally distributed returns.

Inputs rely on historical data which may not be stable during a financial crisis.

Assumes that the underlying portfolios in each asset class are effectively index funds with the same characteristics as the input data.

Does not include transaction costs and investors may not be willing to change their portfolios as often as the model might recommend.



Efficient Markets Hypothesis

States that it is impossible to beat the market because prices already incorporate and reflect all relevant information.

Highly controversial and often disputed theory

Market efficiency can be analysed at three levels:

Weak form – security prices fully reflect past share price and trading volume data. Thus nullifying using technical analysis to analyse trends.

Semi-strong form – share prices reflect all publicly available information and react instantaneously to the release of new information. Neither fundamental nor technical analysis will be of any use.

Strong form – share prices reflect all available information and no one can earn excess returns.



Capital Asset Pricing Model (CAPM)

CAPM

- Expected return on a security or portfolio equals the rate on a risk-free security plus a risk premium
- If the expected return does not meet or beat this required return then the investment should not be undertaken

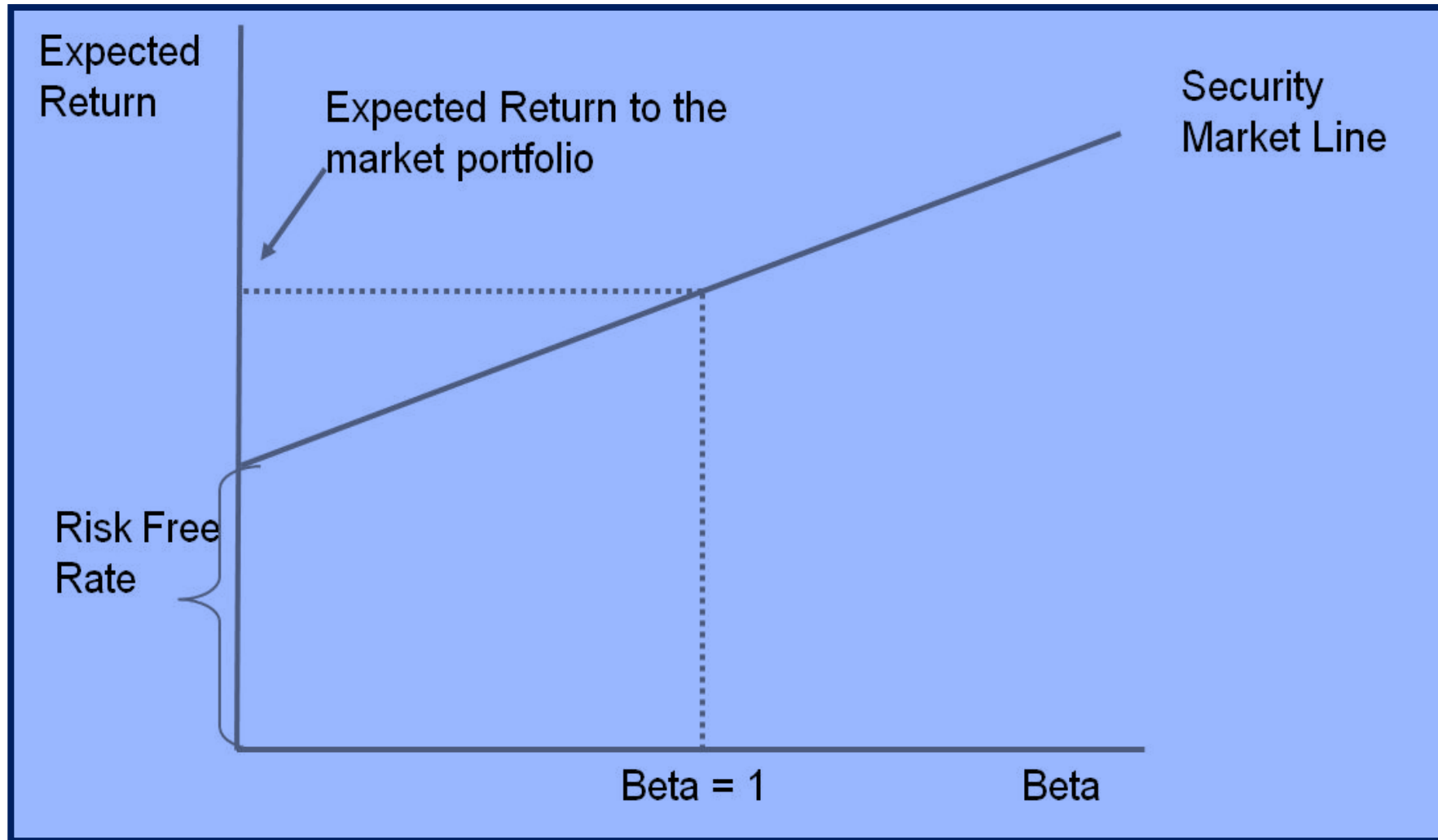
Used to predict the required returns of a security by using its systematic risk - beta

$$\text{Required return} = \text{Risk Free Rate} + (\text{Market Rate} - \text{Risk Free Rate}) * \text{Beta}$$

Beta is calculated by constructing a scatter gram of returns achieved by the stock against the market as a whole



CAPM – Security Market Line



CAPM - Example

If the current risk-free rate is 5% and the expected return from the market is 10%, what return should we expect from a security that has a beta of 1.5?

CAPM formula tells us that we should expect a return of:

$$\text{Required return} = 5\% + (10\% - 5\%) \times 1.5 = 12.5\%$$



Arbitrage Pricing Theory

Rather than relying on a single beta, adopts a more complex multi-factor approach by:

seeking to capture exactly what factors determine security price movements by conducting **regression analysis**

applying a separate risk premium to each identified factor

applying a separate beta to each of these risk premiums depending on a security's sensitivity to each of these factors.

Examples of factors include both industry-related and more general macroeconomic variables:

Anticipated changes in inflation or

Changes in industrial production

Yield spread between investment grade and non-investment grade bonds



Behavioural Finance



Traditional finance theory assumes that people make rational investment decisions

- Choose between different asset classes in the light of prospective risk/return trade-offs
- Think rationally about their overall risk/return objectives

Behavioural finance asserts that the standard finance model does not explain well how most people undertake financial decision-making

Offers alternative explanations of the key question of why security prices deviate from their fundamental values - Key Concepts - Heuristics and Prospect Theory



Drawing on the heuristics, prospect theory has been developed which attempts to describe and explain the seemingly paradoxical states of mind that are often evidenced within individuals' decision-making processes under uncertainty.

- The price that investors pay for a stock has a critical effect on their subsequent behaviour
- Investors also tend to have a greater emotional response to losses than similarly sized gains.

Key Concepts

- **Loss aversion** - Individuals play safe when protecting gains but are reluctant to realise losses.
- **Regret aversion** - this arises from the desire to avoid feeling the pain of regret resulting from a poor investment decision.
- **Mental accounting** - challenges the standard economic assumption that individuals treat types of income and wealth equally.
- **Information and noise traders** - 'noise' is the opposite of information. Since not trading on fundamentals, they are allegedly more likely to buy high and sell low.



Refers to the 'rules of thumb', educated guesses or 'gut feelings' which humans use to make decisions in complex, uncertain environments.

Conclusions

Use of information – individuals may not take into account all relevant information; i.e. this explains why investors rely on past performance and fail to take full account of risk and expected return.

Investment inertia – once people have made decisions, they tend to leave them unchanged. i.e. stick with the Status quo

Representativeness – individual will tend to see patterns and similarities to previous contexts where perhaps none exists. This can lead to behaviour known as 'herding'.

Overconfidence – many investors to overestimate their predictive ability.

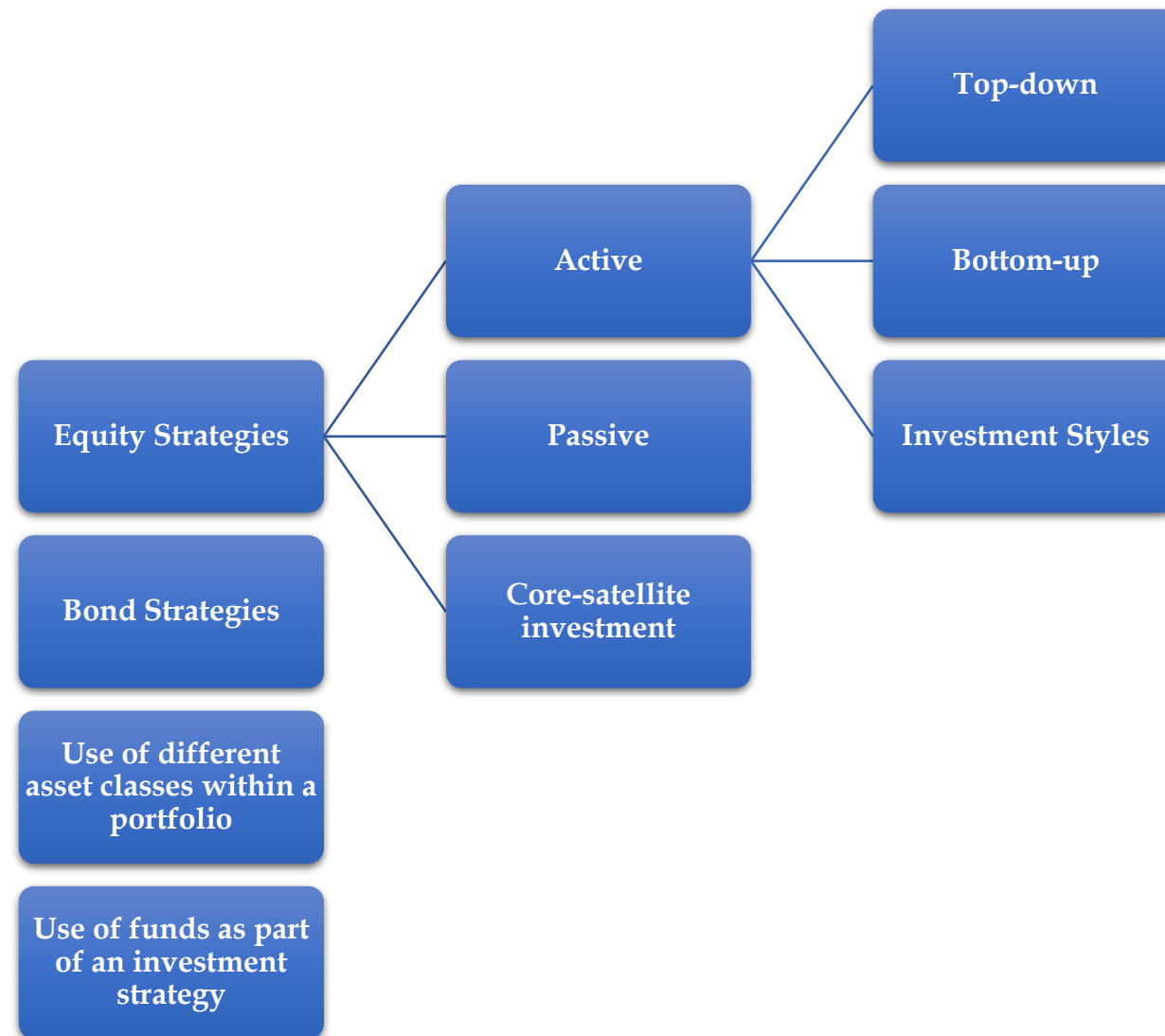
Anchoring – people tend to base their decisions on reference points that are often arbitrarily chosen. For example, whether they choose to sell shares is influenced by what they paid for them

Gambler's fallacy – this is the belief that there are discernible sequences or patterns where none actually exist

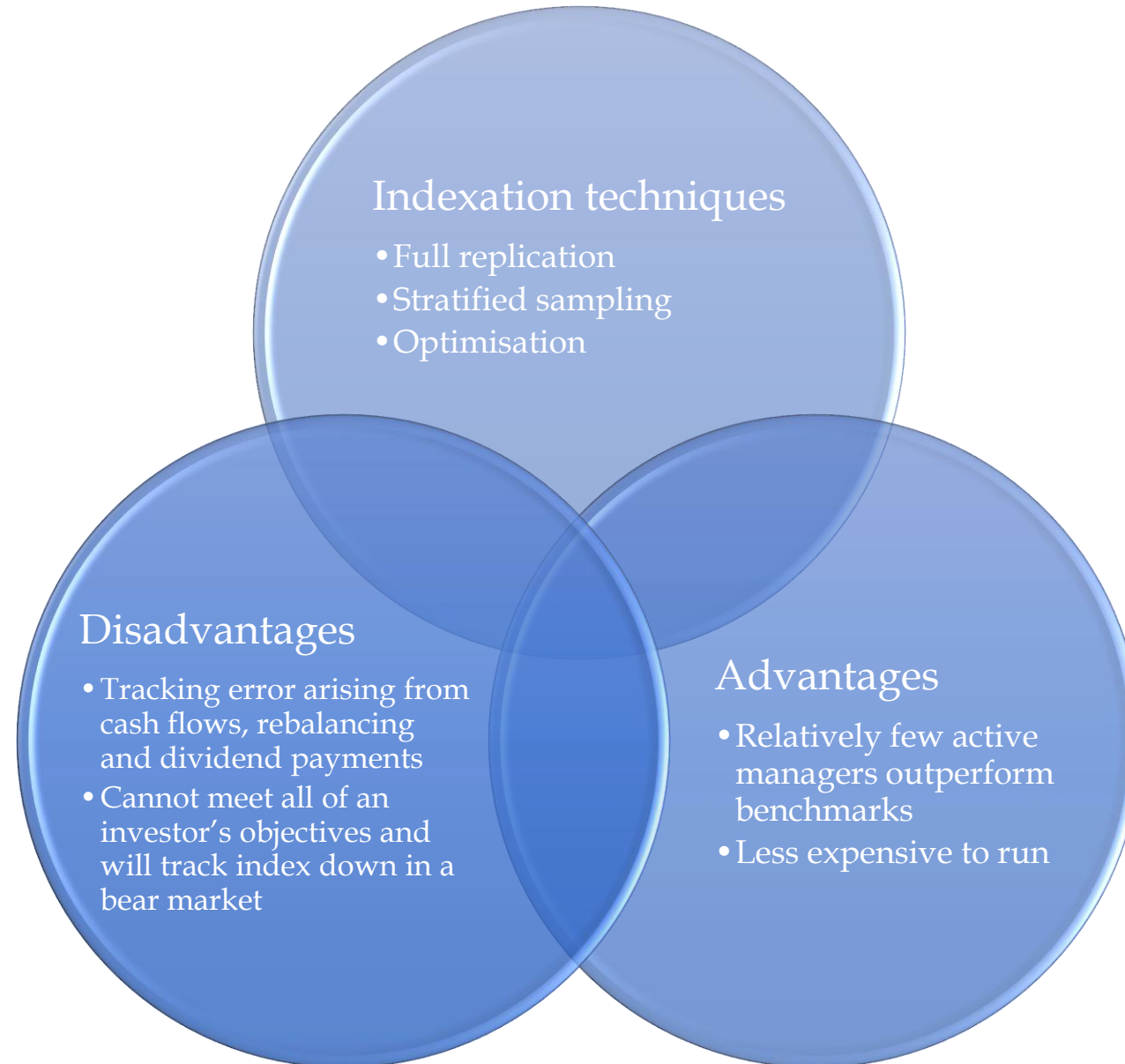
Availability – investors tend to overweight more memorable facts and evidence.



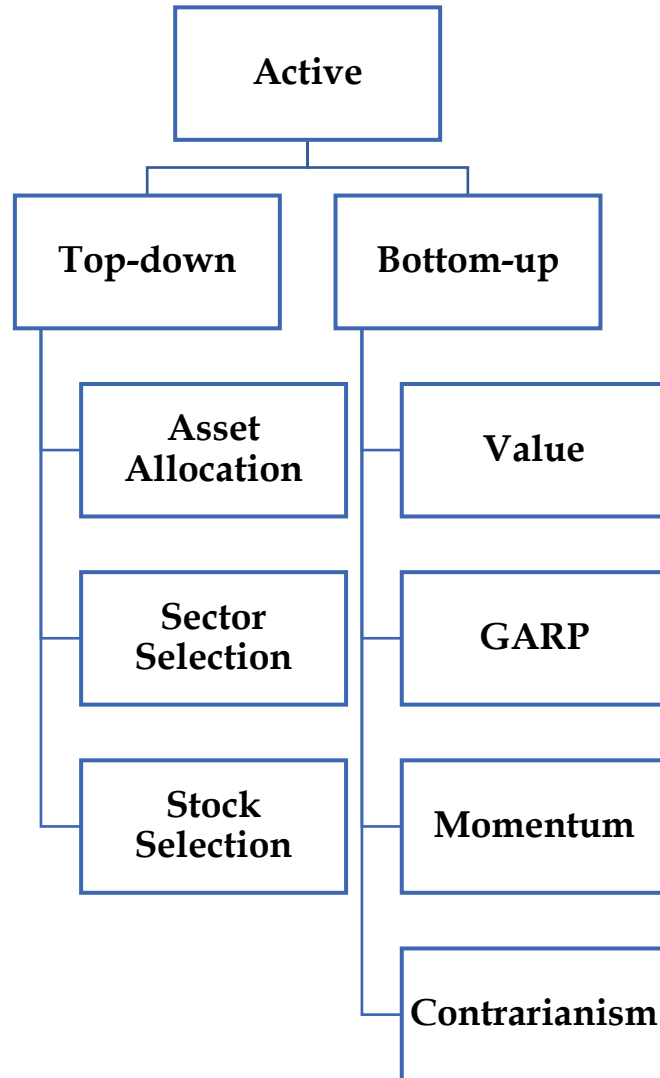
Investment Strategies



Passive Investment Management



Active Investment Management



Active Equity Management seeks to outperform a predetermined benchmark over a specified time period by employing fundamental and technical analysis to assist in the forecasting of future events and the timing of purchases and sales of securities



Top Down Approach – Asset Allocation



Asset Allocation

- First stage is an analysis of prospects for each of the main asset classes within each of the world's major investment regions against the backdrop of the world economic, political and social environment
- Which geographical areas and asset classes are most likely to produce the most attractive risk-adjusted returns taking full account of the client's mandate



Most asset allocation are made with reference to the **peer group median asset allocation** - i.e. 'asset allocation by consensus'

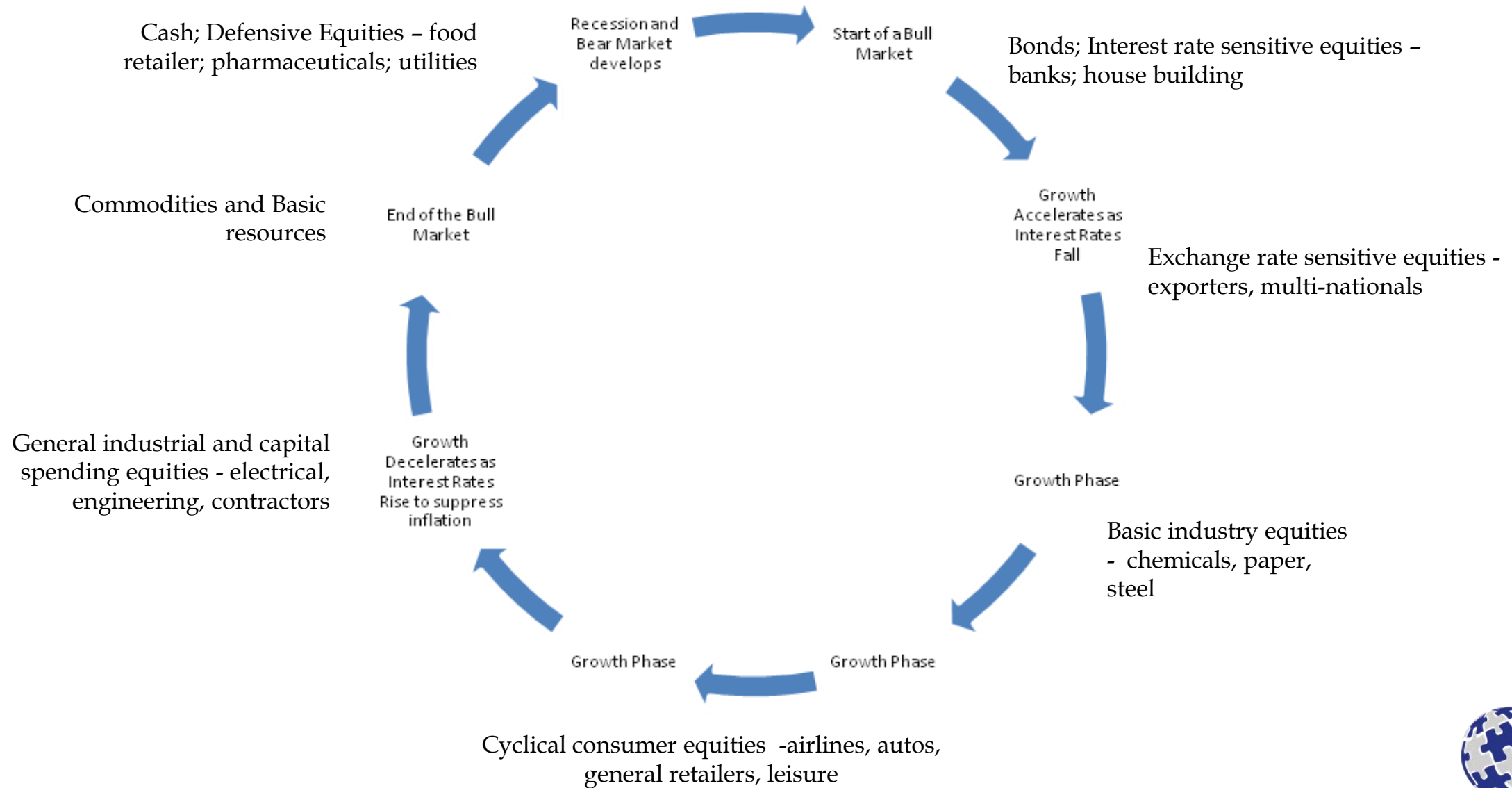
Consider decision whether to hedge market and/or currency risks



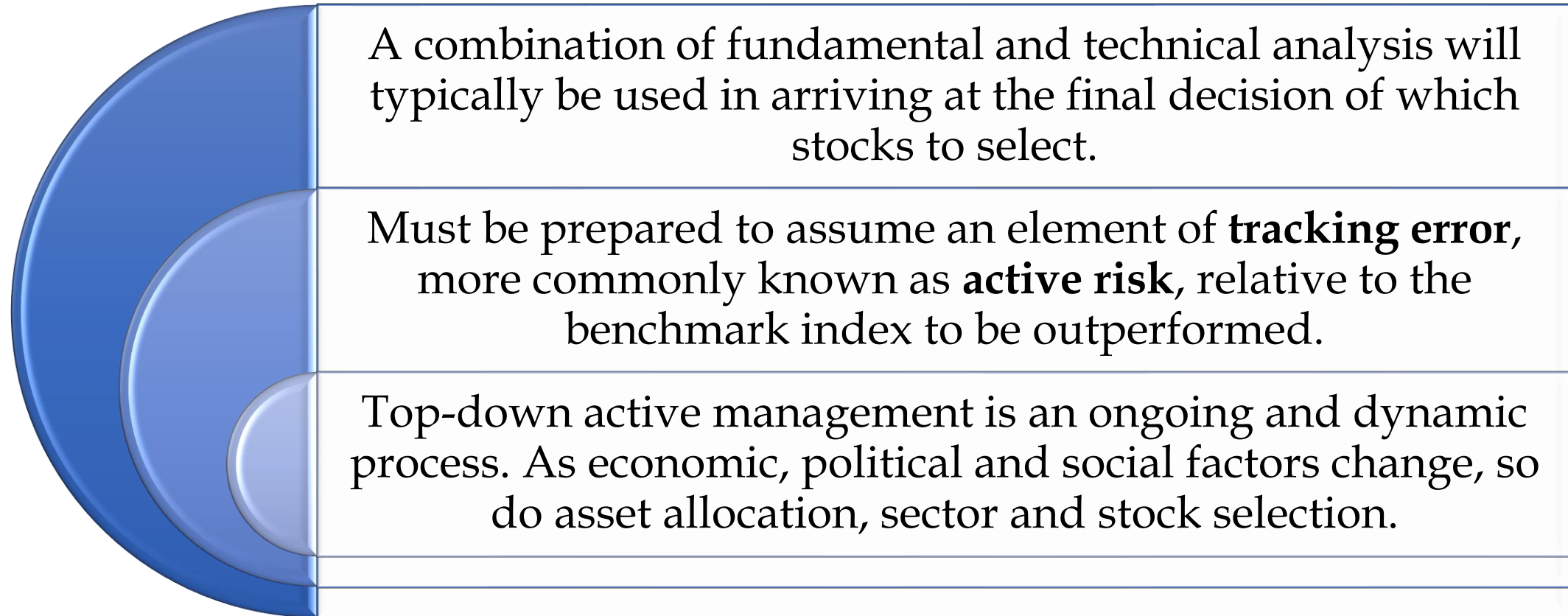
Over the long term, recent academic studies conclude that asset allocation accounts for over 90% of the variation in pension fund returns



Top Down Approach – Sector Selection



Top Down Approach – Stock Selection



Bottom-Up Active Management

Focuses solely on the unique attractions of individual stocks.

Pay no attention to index benchmarks except occasionally for performance comparison purposes.

Characterised by significant tracking error as a result of assuming considerable active risk – tend to be much more volatile than those constructed using top-down methods.

Dependent on the style or approach of the individual fund manager:

Value – based on the premise that deep and rigorous analysis can identify businesses whose value is greater than the price placed on them by the market. average. Often found with managers of 'equity income' or 'income and growth' as 'out of fashion' stocks often have high dividend yields

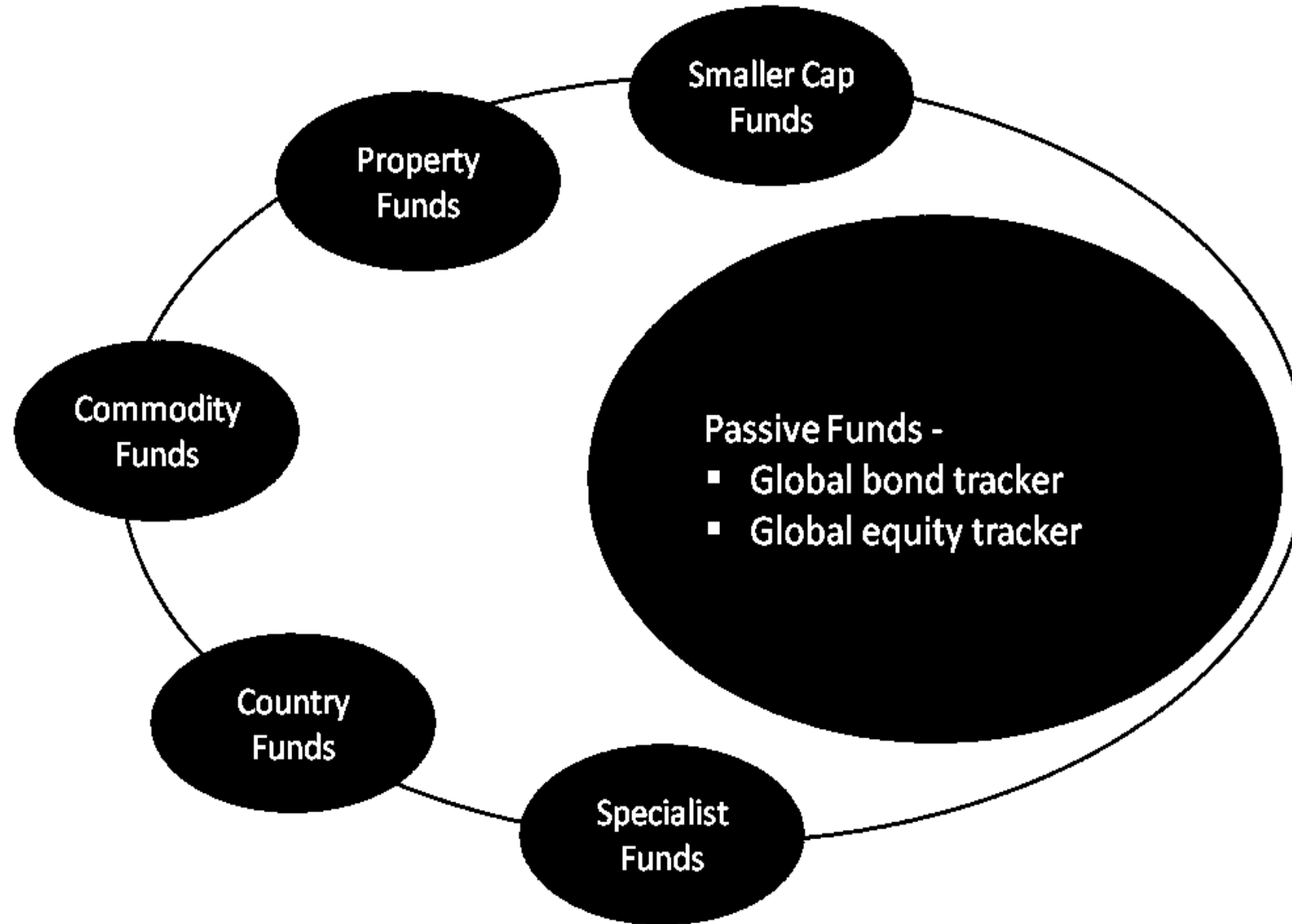
GARP – 'growth at a reasonable price' is based on finding companies with long-term sustainable advantages, in terms of their business franchise, quality of management, technology or other specific factors - used mainly by active growth managers

Momentum – aims to capitalise on the continuance of existing trends in the market - widely adopted by middle-of-the-road fund managers.

Contrarianism – high returns can be achieved by going against the trend – popular with hedge fund managers.



Combining Active and Passive



Framework of ESG Investing

A lot of investors are concerned with the environment and business practices in general these days

As a result, they tend to express their personal values in the investments they make

They do so by investing into ventures that have some sort of social or environmental impact

This form of investing has been collectively termed as **Environmental Social & Governance (ESG)** investing



The Role of Asset Classes and Funds in a Portfolio

Cash

Bonds

Strategies

Funds

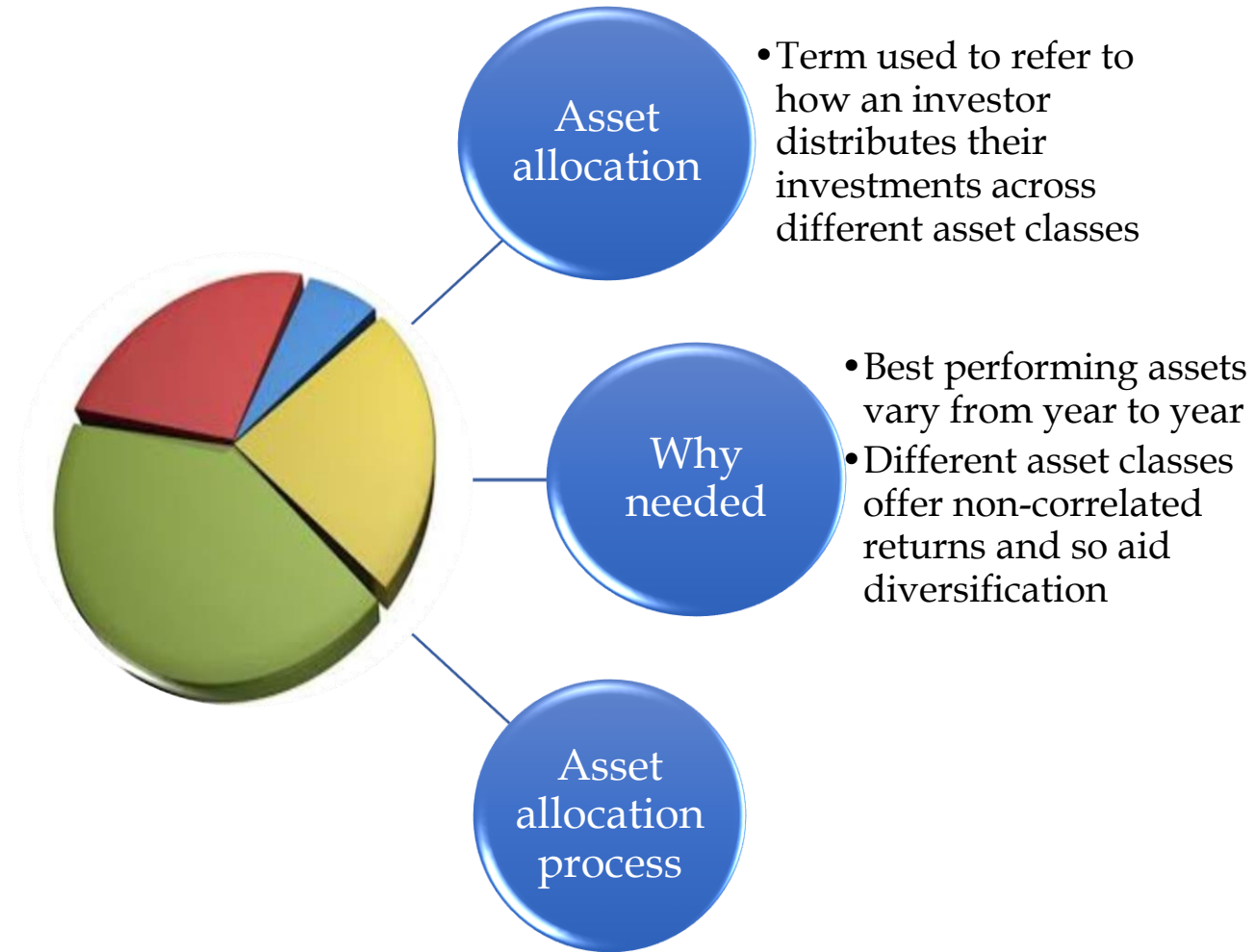
Equities

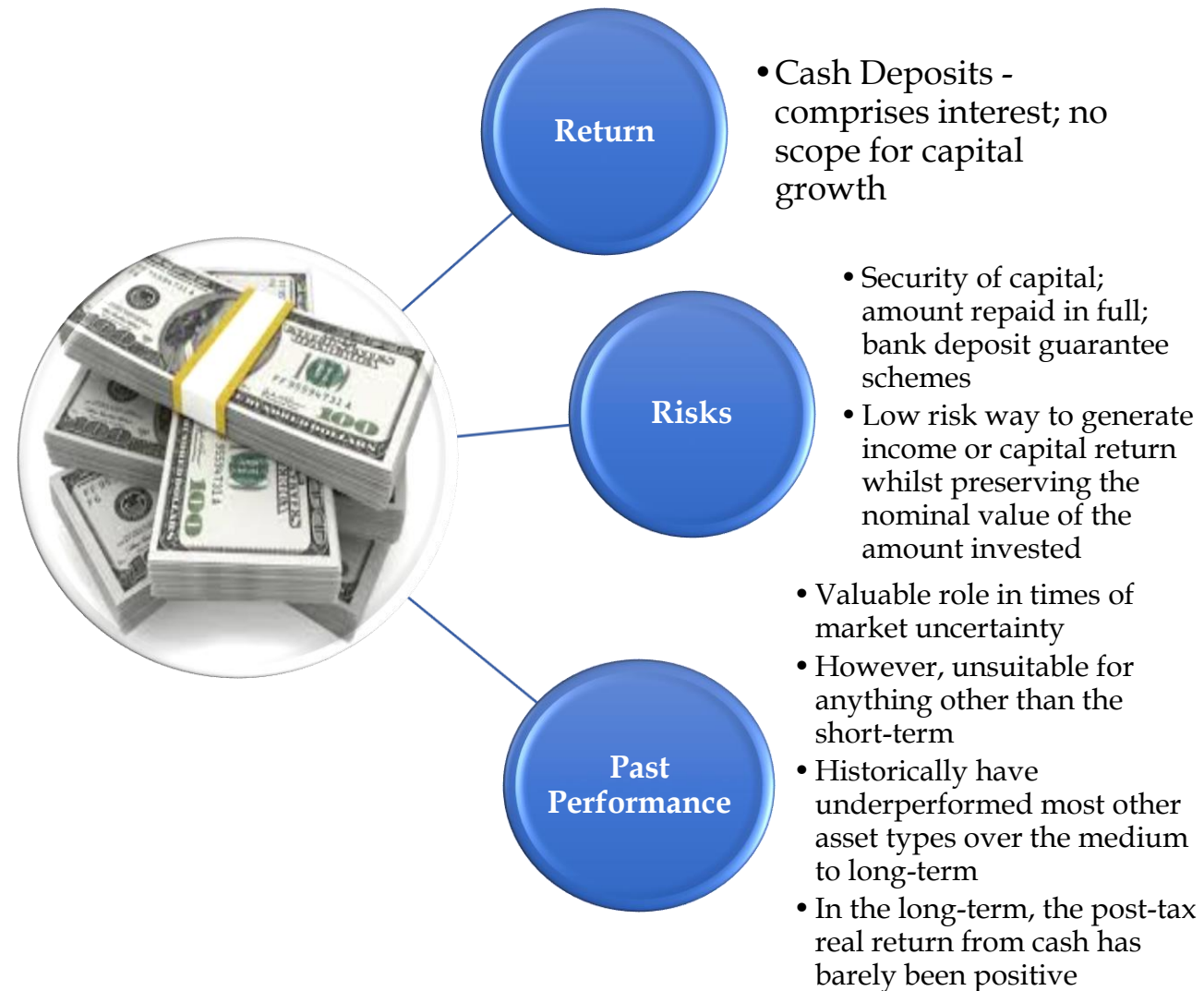
Funds

Fund Selection



Asset Allocation





Returns

- Coupons - fixed, floating or index linked payable half yearly or annually
- Return of capital – nominal value repaid unless index linked; set redemption dates

Advantages

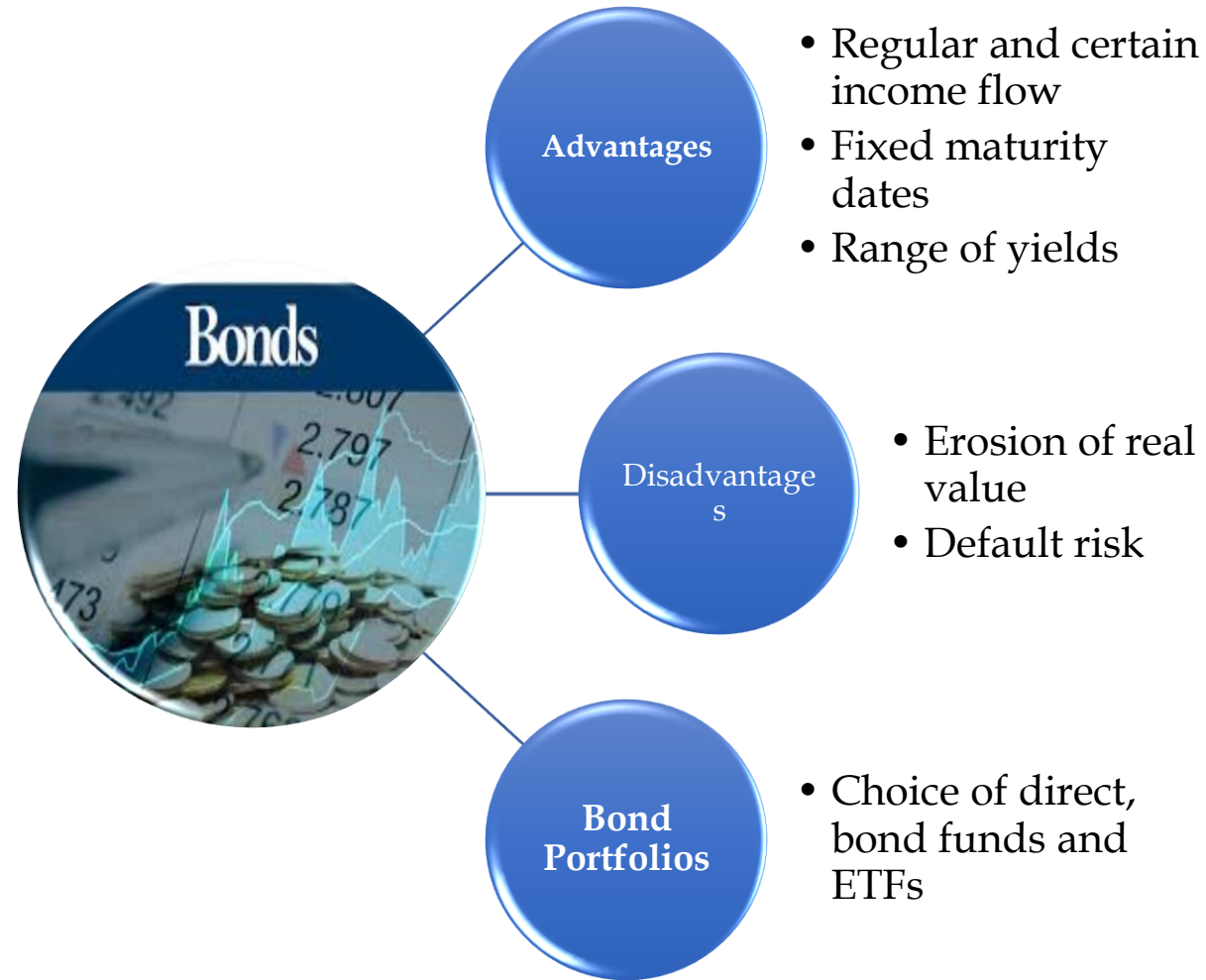
- A regular and certain flow of income
- Range of maturity dates
- And income yields

Past Performance

- Can provide security of return
- Interest rate volatility
- Available direct or through investment funds



Investing in Bonds



Government and Corporate Bond Risks

- Credit risk
- Market or price
- Unanticipated inflation risk
- Liquidity risk
- Exchange rate risk

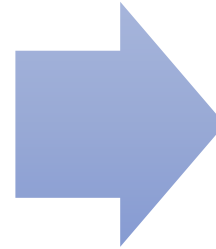
Corporate Bond Risks

- Early redemption risk
- Seniority risk



Diversification

- Bonds from different issuers
- Bonds of different types
- Bonds of different maturities



Strategies

- Active e.g. riding the yield curve
- Passive

Laddering or Bond Immunisation - involves buying securities with a range of different Maturities e.g. 3, 5, 7 and 10 years. This reduces the portfolio's sensitivity to interest rate risk.

Barbell Strategy - Similar to laddering i.e. buying securities of more than one maturity, but at the extreme ends of duration range e.g. bills or notes maturing in 6 months or a year, plus 20- or 30-year bonds.



Advantages of bond funds include:

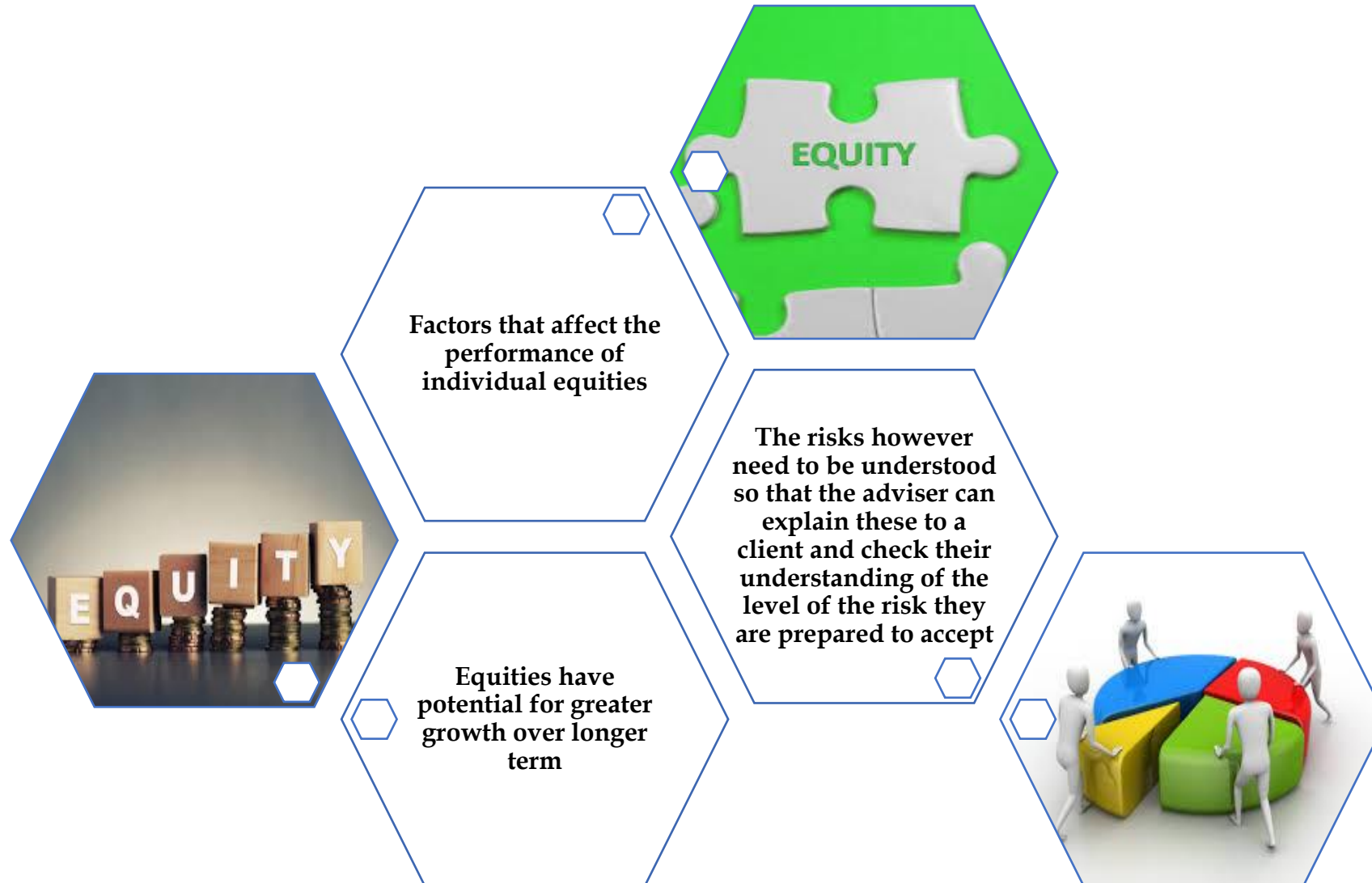
- Diversification
- Professional management
- Liquidity
- Income

Key factors

- Investment objectives
- Average maturity
- Duration
- Credit quality
- Performance
- Fees and charges



Investing in Equities



Role of Equities

Returns

- Dividends
- Corporate actions – bonus issues; return of capital
- Capital growth

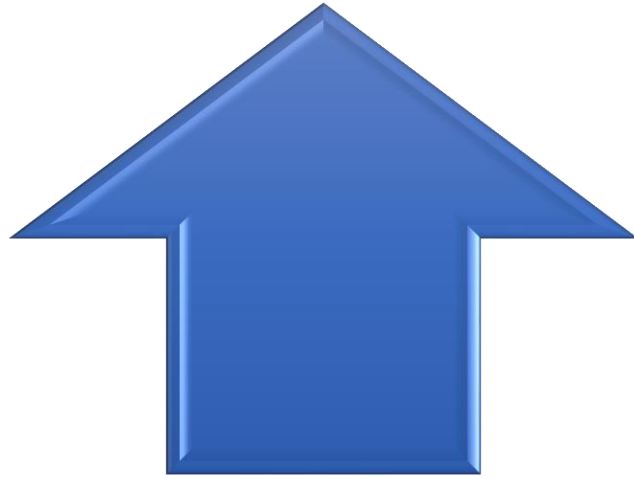
Risks

- Market or price risk; volatility
- Liquidity and currency risk
- High correlation between international markets
- Exposure to economic cycle
- Bankruptcy – Issuer risk

Past Performance

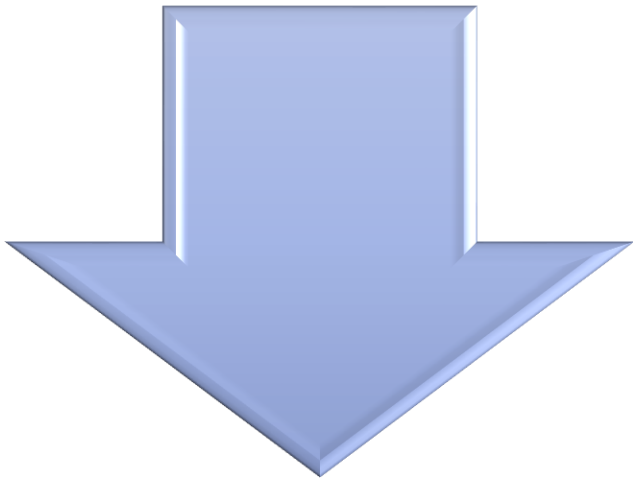
- Have outperformed bonds but only at times
- Long term dividend growth
- Wide range enables globally diversified portfolio to be constructed





Advantages of equity funds

- Spread of risk
- Professional management
- Access to markets and asset classes



Drawbacks

- Charges
- Investment performance



Selecting Funds

Understanding investment management style adopted by fund manager is key when selecting a provider

Range of styles available

Active
Passive

Also need to understand limitations placed on the fund's investment management

- Documented in the prospectus
- Will set out its investment objective
- Will document what investments can and cannot be included
- Will set what percentage limits will be adhered to by stock, sector or market



Key regulatory document for authorisation of funds

Contents:-

- Management & Administration
- Details of fund and investment policy
- General Information
- Valuation, Charges and Income
- Taxation



Fund Selection

- Investment objective
- Portfolio composition
- Past performance
- Fund Manager rating
- Peer fund groups
- Independent fund ratings
- Fund size
- Fund charges
- Risk Measures



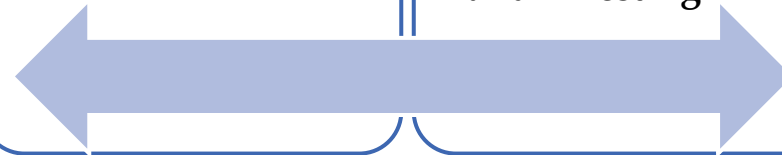
Ratings agencies

- Lipper fund classes
- Standard & Poor funds
- EFAMA fund classifications

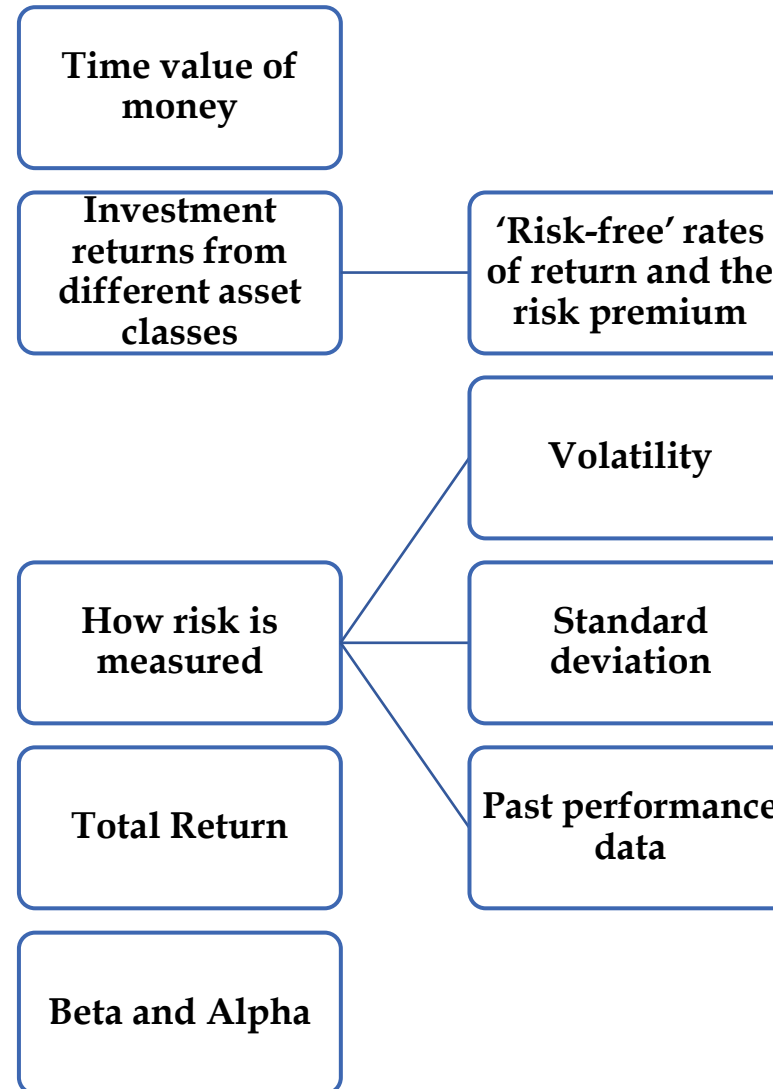


Other issues

- Charges
- Active versus passive styles
- Alternative investment strategies
- Relationship between borrowing and investing



Risk and Return



Time Value of Money



Risk Free Returns

Concept

- The riskier an investment, the higher return an investor should expect for taking on that risk
- Investment risk is the possibility that the security will default or depreciate significantly in value



Volatility and Standard Deviation

Volatility

- Amount of uncertainty or risk about the size of changes in a security's value
- A higher volatility means that a security's price can change dramatically over a short time period in either direction
- A lower volatility means that a security's value does not fluctuate dramatically, but changes in value at a steady pace over a period of time
- One measure of volatility is - beta

Standard Deviation

- Used to measure volatility historically
- Very simply a way to show how market prices tends to cluster around an average
- Used to understand usual volatility and then compare a stock, fund or portfolio



Alpha and Beta

Beta

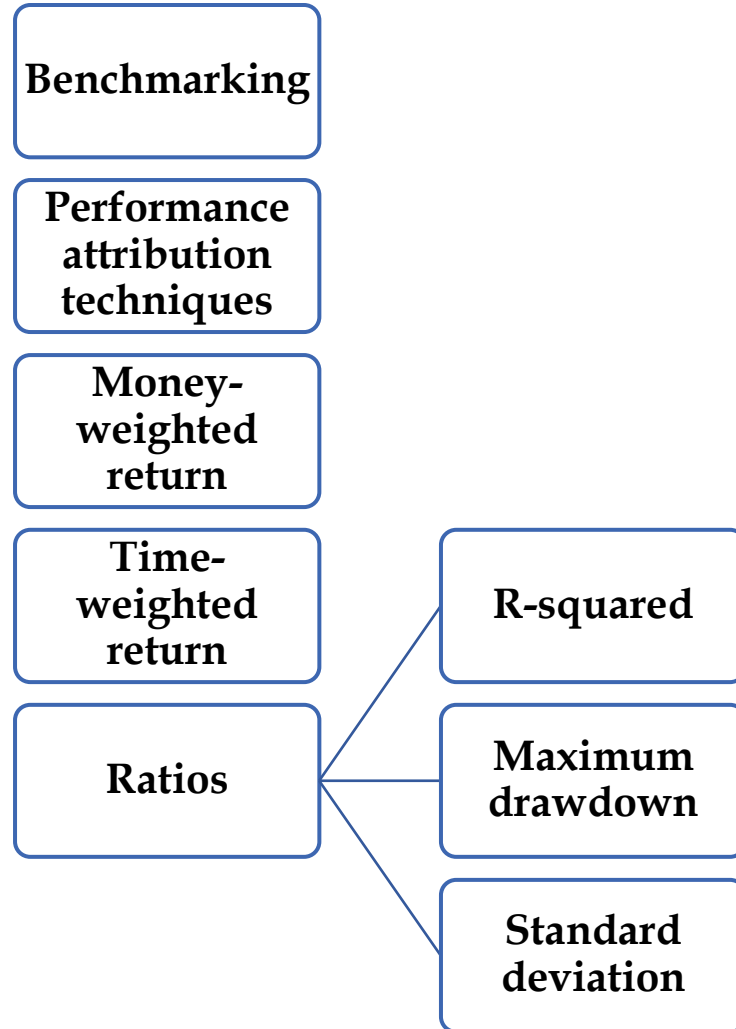
- Measure of the average historic sensitivity, or volatility, of a fund's returns compared to the broader market
- Beta of 1 indicates that the fund has, on average, moved in line with the general market movements
- Beta of 1.5 means that the fund has moved by an average of 1.5% for every 1% market movement
- Beta of less than one indicates that the fund has generally acted defensively to general market moves

Alpha

- Return that is achieved in excess of a benchmark; search for performance greater than average market returns



Performance Measurement



Benchmarking

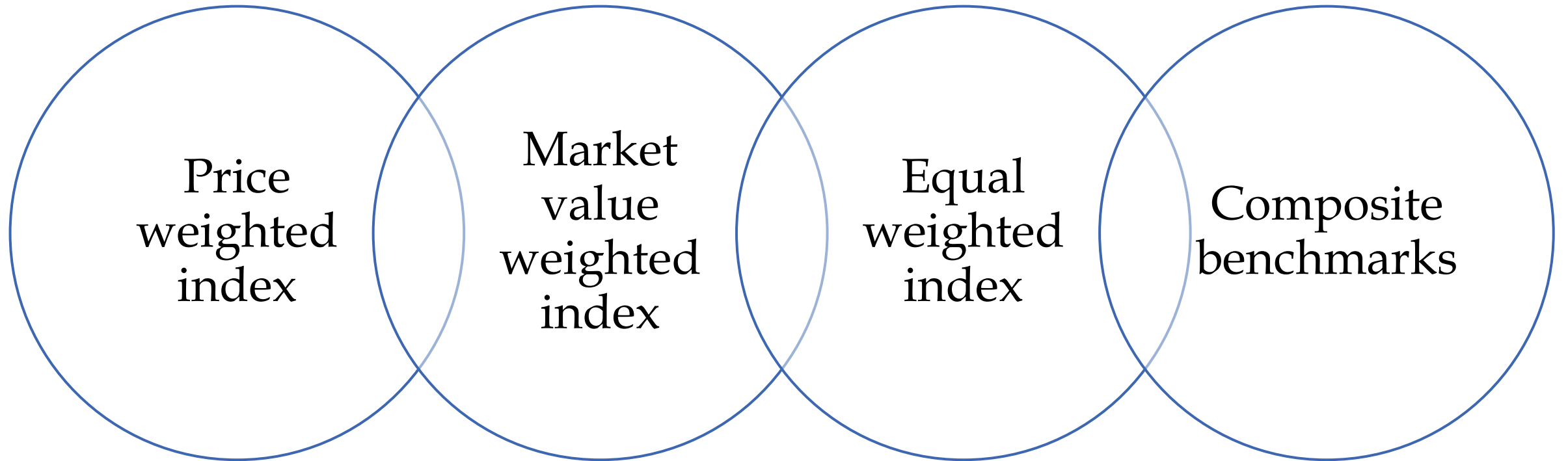
Comparison with a relevant bond or stock market index

Comparison to similar funds or a relevant universe comparison

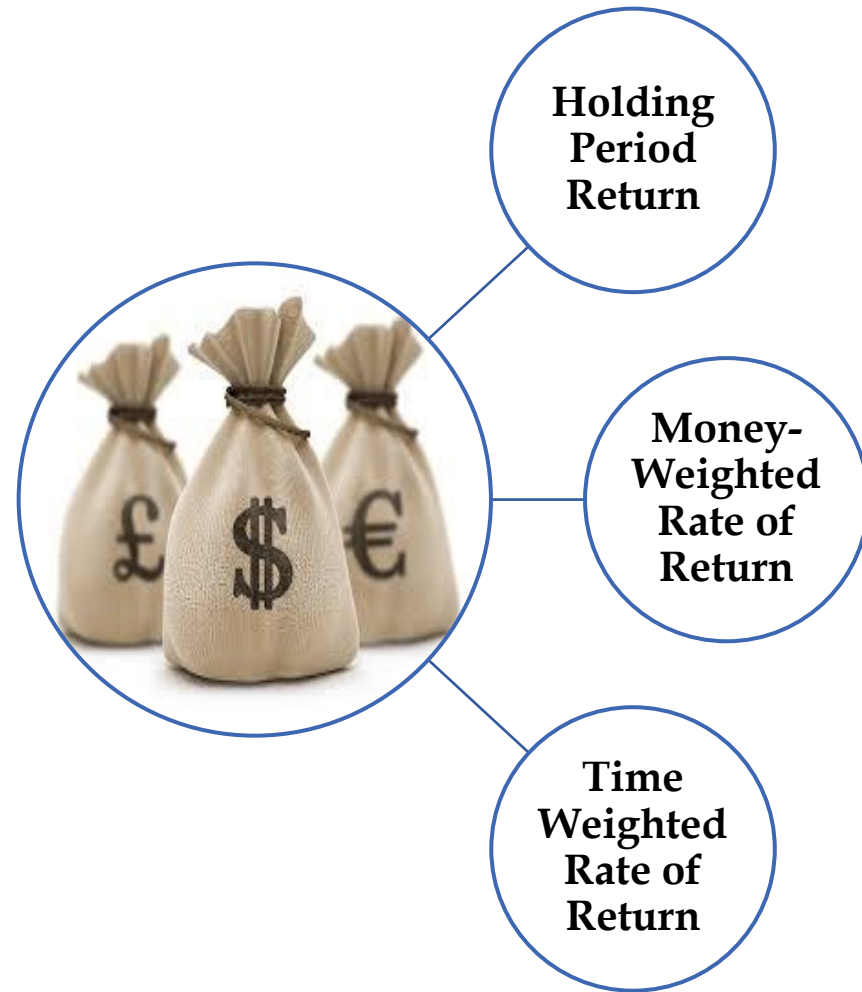
Comparison to a custom benchmark



Indices & Composite Benchmarks



Measuring Portfolio Performance



Performance Measurement

Holding Period Yield

- Also known as total return
- Simply measures how much the portfolio has increased in value over a period of time and expresses it as a percentage
- Does not take into account portfolio cash flows

Money Weighted Rate of Return

- Measures performance where there has been cash movements to produce **internal rate of return** for the fund
- An iterative process and so is a more time-consuming calculation

Time Weighted Rate of Return

- Removes the impact of cash flows on the rate of return calculation
- Widely used in asset management industry; GIPS Standards
- Used to compare performance of an investment manager to a benchmark or across a peer group
- Used for overall performance and to decompose performance to understand where performance arose from – benchmark index; management decisions and timing effect



Performance Ratios

Standard deviation – measures the dispersion of the fund's returns over a period of years.

R-squared – measures the degree to which the fund's performance can be attributed to the index against which it is benchmarked. E.g. has an R-squared of 80%, this would indicate that 80% of its returns can be attributed to movements in the index itself.

Sharpe ratio – measures the fund's return over and above the risk-free rate. The higher the Sharpe ratio, the better the risk-adjusted performance of the portfolio and the greater the implied level of active management skill.



Sortino ratio – similar to sharpe except uses downside deviation i.e. focuses on harmful volatility or negative returns.

Treynor ratio – measures returns in excess of risk free returns

Maximum drawdown – measures the maximum loss from equity high



Assessing the returns achieved by an investment manager involves attributing the performance to -

- Asset allocation
- Sector choice
- Security selection

Asset allocation attribution -

- Formula -
 - (fund value at start of period x portfolio manager asset class weightings x benchmark asset class returns)
 - minus
 - (fund value at start of period x benchmark asset class weightings x benchmark asset class returns)
- Isolates that part of the return attributable to asset allocation

